



Docket No.: 837.1964  
Serial No: 09/803,978

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Shinichi TAKEDA, et al.

Serial No. 09/803,978

Group Art Unit: 3663

Confirmation No. 9367

Filed: March 13, 2001

Examiner: Hughes, Deandra M.

For: METHOD AND DEVICE FOR WAVEFORM SHAPING OF SIGNAL LIGHT

RESPONSE

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**RECEIVED**

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**GROUP 3600**

This is in response to the Advisory Action mailed May 21, 2003.

On page 2 of the Advisory Action, the Examiner asserts that the recited "optimal" level is a relative term, and that ANY level can be considered "optimal."

It is respectfully submitted that the Examiner's assertion, that any level can be considered "optimal", is contrary to the well-known meaning of "optimal" level.

For example, The McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, indicates that a broad definition of "optimization" is "the efforts or processes of making a decision, a design or a system as perfect, effective or functional as possible." Consistent with this definition, The American Heritage College Dictionary, Third Edition, indicates that "optimal" is the "most favorable or desirable; optimum". Copies of the relevant pages from these Dictionaries are attached hereto.

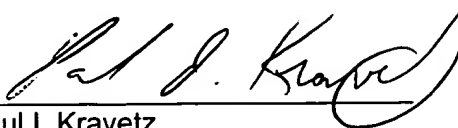
As an example, claim 1 recites the power of the input signal light being controlled so that the quality measurement is improved to an "optimal" level. As an example, if the quality measurement is a bit error rate, there is an optimal level for the bit error rate that can be obtained, as would be understood by a person of ordinary skill in the art. As recited in claim 1, the power of the input signal light would be controlled so that this optimal level of the bit error rate is obtained.

In view of the above, it is respectfully submitted that the rejection is overcome.

Respectfully submitted,

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Date: June 12, 2003

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**optics** [PHYS] 1. Narrowly, the science of light and vision. 2. Broadly, the study of the phenomena associated with the generation, transmission, and detection of electromagnetic radiation in the spectral range extending from the long-wave edge of the x-ray region to the short-wave edge of the radio region, or in wavelength from about 1 nanometer to about 1 millimeter. { 'äptiks }

**optic stalk** [EMBRYO] The constriction of the optic vesicle which connects the embryonic eye and forebrain in vertebrates. { 'äptik, stök }

**optic tectum** [VERT ZOO] The roof of the mesencephalon constituting a major visual center and association area of the brain of premature vertebrates. { 'äptik 'tek-təm }

**optic tract** [ANAT] The band of optic nerve fibers running from the optic chiasma to the lateral geniculate body and mid-brain. { 'äptik, trakt }

**optic vesicle** [EMBRYO] An evagination of the lateral wall of the forebrain in vertebrate embryos which precedes formation of the optic cup. { 'äptik 'ves-ə-kəl }

**optimal control theory** [CONT SYS] An extension of the calculus of variations for dynamic systems with one independent variable, usually time, in which control (input) variables are determined to maximize (or minimize) some measure of the performance (output) of a system while satisfying specified constraints. { 'äptə-məl kən'tröl, thē-ə-rē }

**optimal feedback control** [CONT SYS] A subfield of optimal control theory in which the control variables are determined as functions of the current state of the system. { 'äptə-məl 'fēd,bak kən'tröl }

**optimal policy** [MATH] In optimization problems of systems, a sequence of decisions changing the states of a system in such a manner that a given criterion function is minimized. { 'äptə-məl 'pāl-ə-sē }

**optimal programming** [CONT SYS] A subfield of optimal control theory in which the control variables are determined as functions of time for a specified initial state of the system. { 'äptə-məl 'prō,gram-iŋ }

**optimal regulator problem** See linear regulator problem. { 'äptə-məl 'reg-yə,lād-ər,präb-ləm }

**optimal smoother** [CONT SYS] An optimal filter algorithm which generates the best estimate of a dynamical variable at a certain time based on all available data, both past and future. { 'äptə-məl 'smūth-ər }

**optimal strategy** [MATH] One of the pair of mixed strategies carried out by the two players of a matrix game when each player adjusts strategy so as to minimize the maximum loss that an opponent can inflict. { 'äptə-məl 'strād-ə-jē }

**optimal system** [MATH] A system where the variables representing the various states are so determined that a given criterion function is minimized subject to given constraints. { 'äptə-məl 'sist-əm }

**optimization** [MATH] The maximizing or minimizing of a given function possibly subject to some type of constraints. [SYS ENG] 1. Broadly, the efforts and processes of making a decision, a design, or a system as perfect, effective, or functional as possible. 2. Narrowly, the specific methodology, techniques, and procedures used to decide on the one specific solution in a defined set of possible alternatives that will best satisfy a selected criterion. Also known as system optimization. { 'äptə-mə 'zā-shən }

**optimization theory** [MATH] The specific methodology, techniques, and procedures used to decide on the one specific solution in a defined set of possible alternatives that will best satisfy a selected criterion; includes linear and nonlinear programming, stochastic programming, and control theory. Also known as mathematical programming. { 'äptə-mə 'zā-shən, thē-ə-rē }

**optimize** [COMPUT SCI] To rearrange the instructions or data in storage so that a minimum number of time-consuming jumps or transfers are required in the running of a program. { 'äptə,miz }

**optimized code** [COMPUT SCI] A machine-language program that has been revised to remove inefficiencies and unused or unnecessary instructions so that the program is executed more quickly and occupies less storage space. { 'äptə,mizd 'kōd }

**optimizer** [COMPUT SCI] A utility program that processes machine-language programs and generates optimized code. { 'äptə,miz-ər }

**optimizing control function** [CONT SYS] That level in the functional decomposition of a large-scale control system which

determines the necessary relationships among the variables of the system to achieve an optimal, or suboptimal, performance based on a given approximate model of the plant and its environment. { 'äptə,miz-iŋ kən'tröl, fəŋk-shən }

**optimum allocation** [STAT] A procedure used in stratified sampling to allocate numbers of sample units to different strata to either maximize precision at a fixed cost or minimize cost for a selected level of precision. { 'äptə-məm, al-ə'kā-shən }

**optimum array current** [ELECTROMAG] The current distribution in a broadside antenna array which is such that for a specified side-lobe level the beam width is as narrow as possible, and for a specified first null the side-lobe level is as small as possible. { 'äptə-məm ə'rā,kə'tənt }

**optimum bunching** [ELECTR] Bunching condition required for maximum output in a velocity modulation tube. { 'äptə-məm 'bənch-iŋ }

**optimum charge** [ORD] Propelling charge, with web and propellant weight combination, which produces maximum velocity at a specified pressure. { 'äptə-məm 'chärj }

**optimum code** [COMPUT SCI] A computer code which is particularly efficient with regard to a particular aspect; for example, minimum time of execution, minimum or efficient use of storage space, and minimum coding time. { 'äptə-məm 'kōd }

**optimum coupling** See critical coupling. { 'äptə-məm 'kəp-liŋ }

**optimum cure** [CHEM ENG] The degree of vulcanization at which maximum desired property is reached. { 'äptə-məm 'kyūr }

**optimum filter** [ELECTR] An electric filter in which the mean square value of the error between a desired output and the actual output is at a minimum. { 'äptə-məm 'filtər }

**optimum flight** [AERO ENG] An aircraft flight so planned and navigated that it is completed under the optimum conditions of minimum time and minimum exposure to dangerous flying weather. { 'äptə-məm 'flīt }

**optimum moisture content** [GEOL] The water content at which a specified compactive force can compact a soil mass to its maximum dry unit weight. { 'äptə-məm 'mōis-cher, 'kän,tent }

**optimum programming** [COMPUT SCI] Production of computer programs that maximize efficiency with respect to some criteria such as least cost, least use of storage, least time, or least use of time-sharing peripheral equipment. { 'äptə-məm 'prō,gram-iŋ }

**optimum reverberation time** [ACOUS] The reverberation time which is most desirable for a given room size and a given use, such as speech, chamber music, or symphony orchestra. { 'äptə-məm rī,vərb-ə'rā-shən, tīm }

**optimum separation point** [PETRO ENG] In extraction of natural gasoline, the pressure and temperature conditions necessary for maximum condensation in the separators under field conditions. { 'äptə-məm, sep-ə'rā-shən, pōint }

**optimum-track ship routing** [NAV] The selection of an optimum track for a transoceanic crossing by the application of long-range predictions of winds, waves, and currents to the knowledge of how the routed ship reacts to these variables. { 'äptə-məm 'trak 'ship, rūt-iŋ }

**optimum traffic frequency** See optimum working frequency. { 'äptə-məm 'traf-ik, frē-kwən-sē }

**optimum working frequency** [COMMUN] The most effective frequency at a specified time for ionospheric propagation of radio waves between two specified points. Also known as frequency optimum traffic; optimum traffic frequency. { 'äptə-məm 'wörk-iŋ, frē-kwən-sē }

**optional halt instruction** [COMPUT SCI] A halt instruction that can cause a computer program to stop either before or after the instruction is obeyed if certain criteria are met. Also known as optional stop instruction. { 'äp-shən-əl 'hōlt in, strək-shən }

**optional product** [COMPUT SCI] Any of various forms of documentation that may be made available with a software product, such as source code, manuals, and instructions. { 'äp-shən-əl 'präd-əkt }

**optional stop instruction** See optional halt instruction. { 'äp-shən-əl 'stöp in, strək-shən }

**option switch** [COMPUT SCI] 1. A DIP switch or jumper that activates an optional feature. 2. A software parameter that overrides a default value and thereby activates an optional feature. Also known as option toggle. { 'äp-shən, swich }

**option toggle** See option switch. { 'äp-shən, tæg-əl }

# opportunistic infection

ption

## The American Heritage College Dictionary, Third Edition

**opportunistic infection** *n.* An infection by a microorganism that normally does not cause disease but becomes pathogenic when the body's immune system is impaired and unable to fight off infection, as in AIDS and certain other diseases.

**op·por·tu·ni·ty** (ôp'ô-ôô'ni-tê, -tyôô' -) *n., pl. -ties* 1. a. A favorable or advantageous circumstance or combination of circumstances. b. A favorable or suitable occasion or time. 2. A chance for progress or advancement.

**op·pos·a·ble** (ôp'ô-zô-bal) *adj.* 1. Possible to oppose or resist. 2. That can be placed opposite something else: *The thumb is an opposable digit.* — **op·pos·a·bil·i·ty** *n.*

**op·pose** (ôp'ôz') *v.* -posed, -pos·ing, -pos·es. — *tr.* 1. To be in contention or conflict with. 2. To be resistant to: *opposes new ideas.* 3. To place opposite in contrast or counterbalance. 4. To place so as to be opposite something else. — *intr.* To act or be in opposition. [ME *opposen*, to question, interrogate < OFr. *opposer*, alteration (influenced by *poser*, to place; see *pose*) of Lat. *oppônere*, to oppose (ob-, against; see ob- + *ponere*, to put; see apo-).] — **op·pos·er** *n.*

**Syns:** oppose, fight, combat, resist, withstand, contest. These verbs mean to set someone or something in opposition to another. Oppose has the fewest connotations: "The idea is inconsistent with our constitutional theory and has been stubbornly opposed . . . since the early days of the Republic" (E.B. White). Fight and combat suggest vigor and aggressiveness: "All my life I have fought against prejudice and intolerance" (Harry S. Truman). "We are not afraid . . . to tolerate any error so long as reason is left free to combat it" (Thomas Jefferson). To resist is to strive to fend off or offset the actions, effects, or force of: "Pardon was freely extended to all who had resisted the invasion" (John R. Green). Withstand often implies successful resistance: "Neither the southern provinces, nor Sicily, could have withstood his power" (Henry Hallam). To contest is to call something into question and take an active stand against it: *contested his right to sell the land.*

**op·po·site** (ôp'ô-zit) *adj.* 1. Placed or located directly across from something else or from each other. 2. Facing the other way; moving or tending away from each other: *opposite directions.* 3. Altogether different, as in nature, quality, or significance. 4. Bot. Growing in pairs on either side of a stem. — *n.* 1. One that is opposite or contrary to another. 2. An opponent or antagonist. 3. An antonym. — *adv.* In an opposite position. — *prep.* 1. Across from or facing. 2. In a complementary dramatic role to. [ME < OFr. < Lat. *oppositus*, p.part. of *oppônere*, oppose. See *oppose*.] — **op·po·site·ly** *adv.* — **op·po·site·ness** *n.*

**opposite number** *n.* A person who holds a position in an organization or a system that corresponds to that of a person in another organization or system; a counterpart.

**op·po·si·tion** (ôp'ô-zish'ân) *n.* 1. a. The act of opposing or resisting. b. The condition of being in conflict; antagonism. 2. Placement opposite to or in contrast with another. 3. Something that serves as an obstacle. 4. Often **Opposition**. A political party or an organized group opposed to the group, party, or government in power. 5. *Astron.* a. A configuration in which the earth lies on a straight line between the sun and a superior planet or the moon. b. The position of the superior planet or the moon in this configuration. 6. *Logic.* The relation existing between two propositions having an identical subject and predicate but differing in quantity, quality, or both. 7. *Ling.* Contrast in a language between two phonemes or other linguistically important elements. — **op·po·si·tion·al** *adj.*

**op·po·si·tion·ist** (ôp'ô-zish'ân-ist) *n.* A member of an opposition. — **op·po·si·tion·ist** *adj.*

**op·press** (ôp·prêz') *tr.v.* -pressed, -press·ing, -press·es. 1. To keep down by severe and unjust use of force or authority. 2. To weigh heavily on: *Poverty oppresses the spirit.* 3. *Obsolete.* To overwhelm or crush. [Ult. < Lat. *oppressus*, p.part. of *opprimere*, to press against: ob-, against; see ob- + *premere*, to press; see *per-*.] — **op·pres·sor** *n.*

**op·pres·sion** (ôp·prêsh'ân) *n.* 1. a. The act of oppressing; arbitrary and cruel exercise of power. b. The state of being oppressed. 2. Something that oppresses. 3. A feeling of being heavily weighed down in mind or body.

**op·pres·sive** (ôp·prêz'iv) *adj.* 1. Difficult to bear; burdensome: *oppressive laws.* 2. Exercising power arbitrarily and often unjustly; tyrannical. 3. Weighing heavily on the senses or spirit. — **op·pres·sive·ly** *adv.* — **op·pres·sive·ness** *n.*

**op·pro·bri·ous** (ôp·prô'brê-ôz) *adj.* 1. Expressing contemptuous reproach; scornful or abusive. 2. Bringing disgrace; shameful or infamous. — **op·pro·bri·ous·ly** *adv.*

**op·pro·bri·um** (ôp·prô'brê-ôm) *n.* 1. Disgrace arising from exceedingly shameful conduct; ignominy. 2. Scornful reproach or contempt. 3. A cause of shame or disgrace. [Lat. < *opprobriare*, to reproach: ob-, against; see ob- + *probum*, reproach; see *bher-*.] — **op·pugn** (ôp·pyôôn') *tr.v.* -pugned, -pugn·ing, -pugns. To oppose, contradict, or call into question. [ME *oppugnere* < Lat. *oppugnare*, to attack: ob-, against; see ob- + *pugnare*, to fight with the fist; see *peuk-*.] — **op·pugn·er** *n.*

**op·sin** (ôp'sin) *n.* A protein of the retina, esp. the protein

constituent of rhodopsin, that makes up one of the pigments. [Prob. back-formation < *rhodopsin*.]

**op·sals** *suff.* Something resembling a specified thing. [Gk., sight, seeing, like < *opsis*, sight, appearance.]

**op·so·nin** (ôp'sô-nîn) *n.* An antibody in blood serum that causes bacteria or other foreign cells to become susceptible to the action of phagocytes. [Lat. *opsônare*, to furnish withvisions (< Gk. *opsônein* < *opson*, condiment, dinner).] — **op·son·ic** (ôp'sôn'ik) *adj.*

**op·so·nize** (ôp'sô-nîz') *tr.v.* -nized, -niz·ing, -niz·es. To make (bacteria or other cells) more susceptible to the action of phagocytes. [< *opsonin*.] — **op·so·niz·a·tion** (*ôp'sô-nîz'â-shàn*) *n.*

**op·sps** *suff.* Examination: *biopsy*. [Gk. *opsis*, sight, seeing.]

**opt** (ôpt) *intr.v.* **opt·ed**, **opt·ing**, **opts**. To make a choice; to decide. — **phrasal verb.** **opt out**. *Slang.* To choose not to participate in something. [Fr. *opter* < OFr. < Lat. *optare*, to choose.]

**opt** *abbr.* 1. Gram. Optative. 2. Optical; optician; etc.

**Optimum** 2. A. Optional. 3. Optimum. 4. Optional.

**op·ta·tive** (ôp'tô-tiv) *adj.* 1. Expressing a wish or desire. 2. Gram. a. Of, relating to, or being a mood of verbs in certain languages, such as Greek, used to express a wish, desire, or being a statement using a verb in the subjunctive mood to indicate a wish or desire, as in *Were it possible, I would do it.* — *n.* Gram. 1. The optative mood. 2. A verb that expresses an expression in the optative mood. [ME *optativus* < Lat. *optativus*, p.part. of *optare*, to wish.] — **op·ta·tive·ly** *adv.*

**op·tic** (ôp'tik) *adj.* 1. Of or relating to the eye or vision. 2. Of or relating to the science of optics or optical equipment. — *n.* 1. An eye. 2. Any of the lenses, prisms, or mirrors of an optical instrument. [ME *optik* < OFr. *optique* < *opticus* < Gk. *optikos* < *optos*, visible.]

**op·ti·cal** (ôp'ti-kal) *adj.* 1. Of or relating to sight; visual. 2. Designed to assist sight. 3. Of or relating to optics, esp. light-sensitive devices. — **op·ti·cal·ly** *adv.*

**optical activity** *n.* Chem. A property caused by asymmetric molecular structure that enables a substance to rotate the plane of incident polarized light.

**optical art** *n.* Op art.

**optical character reader** *n.* *Comp. Sci.* A device used for optical character recognition.

**optical character recognition** *n.* *Comp. Sci.* The use of light-sensitive devices to identify and encode printed or handwritten characters.

**optical disk or optical disc** *n.* *Comp. Sci.* A plastic-coated disk that stores digital data, such as music or text, as tiny pits etched into the surface and is read with a laser.

**optical fiber** *n.* A flexible optically transparent fiber, usu. glass or plastic, through which light can be transmitted by successive internal reflections.

**optical illusion** *n.* A visually perceived image that is deceptive or misleading.

**optic axis** *n.* An optical path through a crystal along which a ray of light can pass without undergoing double refraction.

**optic chiasma** *n.* The partial intersection or crossing of the optic nerve fibers on the underside of the hypothalamus.

**optic disk** *n.* *Anat.* See *blind spot*.

**op·ti·cian** (ôp'tish'ân) *n.* 1. One that makes lenses and eyeglasses. 2. One that sells lenses, eyeglasses, and other optical instruments.

**optic nerve** *n.* Either of the second pair of cranial nerves that carry visual information from the retina to the brain.

**op·tics** (ôp'tiks) *n.* (used with a sing. v.) The branch of physics that deals with visible light, vision, and usu. ultraviolet and infrared electromagnetic radiation.

**op·ti·mal** (ôp'tô-mal) *adj.* Most favorable or desirable: *optimum*. — **op·ti·mal·ly** *adv.*

**op·ti·mism** (ôp'ti-mîz'm) *n.* 1. A tendency to expect the best possible outcome or dwell on the most hopeful aspects of a situation. 2. *Philos.* The doctrine, asserted by Leibniz, that this world is the best of all possible worlds. b. The belief that the universe is improving and that good will ultimately triumph over evil. [Fr. *optimisme* < NLat. *optimum*, the greatest good. See *optimum*.]

**op·ti·mist** (ôp'ti-mîst) *n.* 1. One who usu. expects a favorable outcome. 2. A believer in philosophical optimism. — **op·ti·mis·tic** *adj.* — **op·ti·mis·tic·ly** *adv.*

**op·ti·mi·za·tion** (ôp'ti-mî-zâ'shàn) *n.* The procedure or procedures used to make a system or design most effective or functional, esp. the mathematical techniques involved.

**op·ti·mize** (ôp'ti-mîz') *tr.v.* -mized, -miz·ing, -miz·es. To make most perfect or effective. 2. To make the most of.

**op·ti·mum** (ôp'ti-mâm) *n., pl. -ma (-mâ) or -mums (-mums)* 1. The point at which the condition, degree, or amount of something is the most favorable. 2. *Biol.* The most favorable conditions for growth and reproduction. — *adj.* Most favorable or advantageous; best. [Lat., neut. sing. of *optimus*, best. See *opt-*.]

**op·tion** (ôp'shàn) *n.* 1. The act of choosing; choice. 2. The power or freedom to choose. 3. a. The